# United International University

Dept. of Computer Science & Engineering (CSE)

Trimester: Fall 2022

## CSE1326: Digital Logic Design Laboratory

## Lab Report-

| | |
|---|---|
| ID | 0 1 1 2 2 1 4 9 4 |
| Name | Mezbah Uddin |
| Section | |
| Group No | |
| Experiment No | |
| Experiment Name | Arbitrary sequence counter |
| Date of Performance | 2023 |
| Date of Submission | 2023 |

Disclaimer:
I thereby certify that this lab report is prepared by me only. I did not copy any part of this from anybody and did not let other copy any part of my report.

Signature of the Teaching Assistant

Signature of the Student

# Experiment-01

## Step-01:

### ❖ Instrument:

- use IC's
- use Logism Software
- Use J-k flip flop buildup state table
- Use k-map for equation
- And finally use Logism diagram for create circuit Diagram

### ❖ Design circuit to count the sequence:


## Step-02:

- **Format Table:**

| INPUT | | OUTPUT | |
|---|---|---|---|
| Q(t) | Q(t+1) | J | K |
| 0 | 0 | 0 | X |
| 0 | 1 | 1 | X |
| 1 | 0 | X | 1 |
| 1 | 1 | X | 0 |

- **State Table:**

| NO. | Present State | | | Next State | | | Input | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $Q_2$ | $Q_1$ | $Q_0$ | $N_2$ | $N_1$ | $N_0$ | $J_2$ | $K_2$ | $J_1$ | $K_1$ | $J_0$ | $K_0$ |
| | | | | | | | $Q_2\backslash N_2$ | | $Q_1\backslash N_1$ | | $Q_0\backslash N_0$ | |
| 00 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | X | 1 | X | 0 | X |
| 01 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | X | 1 | X | X | 1 |
| 02 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | X | X | 0 | 1 | X |
| 03 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | X | X | 1 | X | 0 |
| 04 | 1 | 0 | 0 | 0 | 0 | 0 | X | 1 | 0 | X | 0 | X |
| 05 | 1 | 0 | 1 | 0 | 1 | 1 | X | 1 | 1 | X | X | 0 |
| 06 | 1 | 1 | 0 | 0 | 0 | 0 | X | 1 | X | 1 | 0 | X |
| 07 | 1 | 1 | 1 | 1 | 0 | 1 | X | 0 | X | 1 | X | 0 |

**Step-03:**

➢ **Use k-map for $J_2$ :**

| BC / A | B'C' | B'c | BC | BC' |
|---|---|---|---|---|
| A' | | 1 | | 1 |
| A | X | X | X | X |

**Equation $J_2 = B'C + BC'$**

➢ **Use k-map for $K_2$ :**

| BC / A | B'C' | B'c | BC | BC' |
|---|---|---|---|---|
| A' | X | X | X | X |
| A | 1 | 1 | | 1 |

**Equation $K_2 = B' + C'$**

➢ **Use k-map for $J_1$ :**

| BC / A | B'C' | B'c | BC | BC' |
|---|---|---|---|---|
| A' | 1 | 1 | X | X |
| A | | 1 | x | X |

**Equation $J_1 = C + A'$**

➢ **Use k-map for $K_1$ :**

| BC / A | B'C' | B'c | BC | BC' |
|---|---|---|---|---|
| A' | X | X | 1 | |
| A | X | X | 1 | 1 |

**Equation $K_1 = C + A$**

➢ **Use k-map for $J_0$ :**

| BC / A | B'C' | B'c | BC | BC' |
|---|---|---|---|---|
| A' | | X | X | 1 |
| A | | X | X | |

**Equation $J_0 = A'B$**

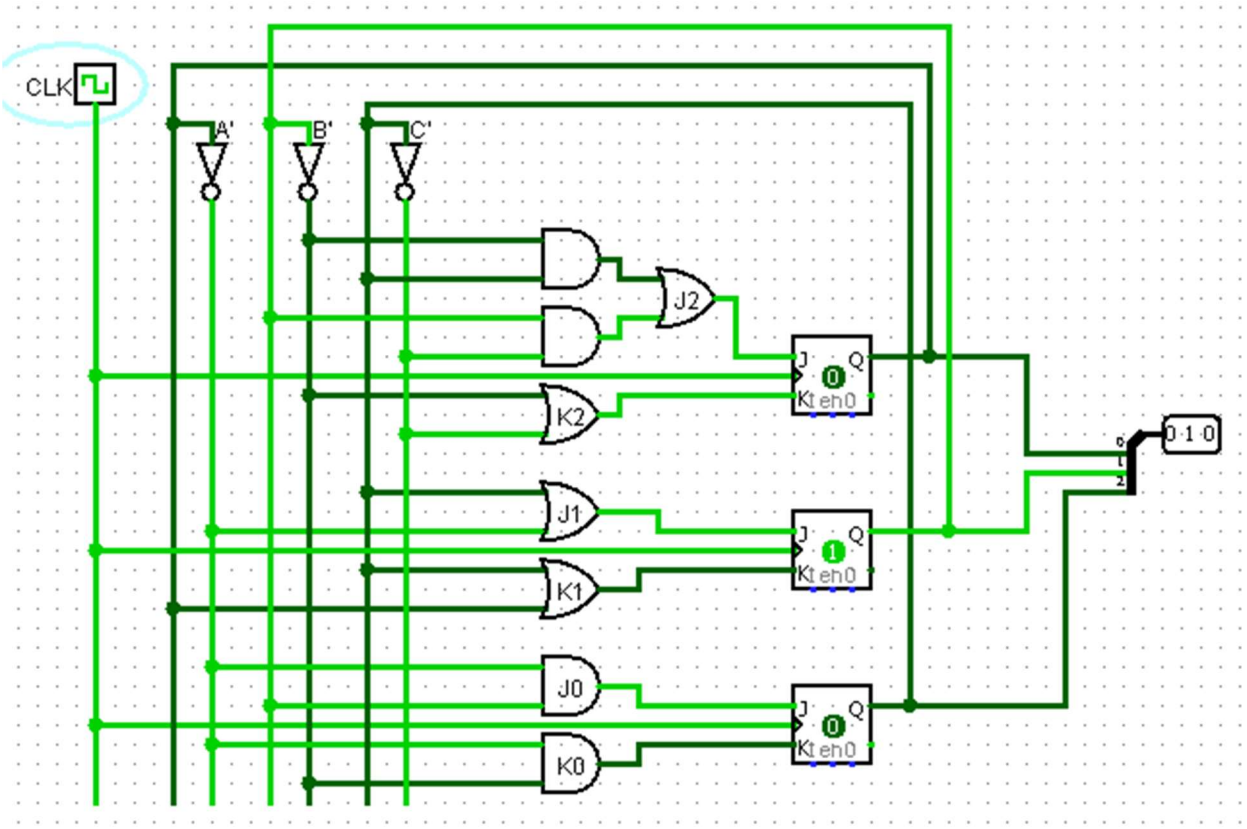
➢ **Use k-map for $K_0$ :**

| BC / A | B'C' | B'c | BC | BC' |
|---|---|---|---|---|
| A' | X | 1 | | X |
| A | X | | | X |

**Equation $K_0 = A'B'$**

Step-04:

- **Circuit Diagram:**




END